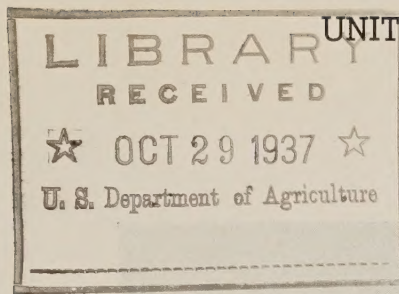


Historic, Archive Document

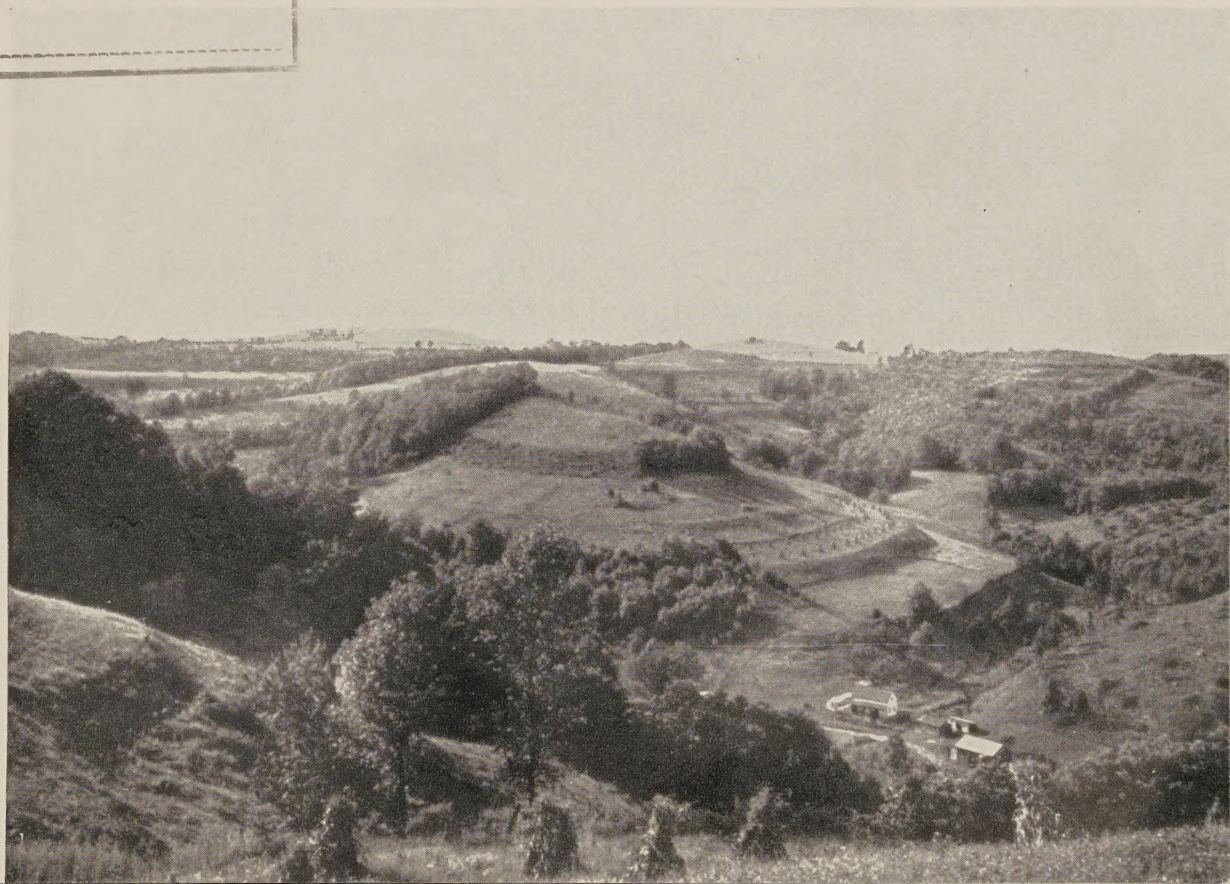
Do not assume content reflects current scientific knowledge, policies, or practices.

1.6
So39E
Reserv



UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

EROSION CONTROL in the NORTHEAST



This pamphlet was prepared to furnish a general picture of the soil-conservation problem in the northeastern section of the United States. More detailed information on the subject of soil erosion and its control may be obtained from various publications issued by the Department of Agriculture.

FROM the fertile fields in the potato country of northern Maine to the livestock and dairy lands on the rolling hills of West Virginia, many farmers are adopting a new concept of land use. In the Northeast, a section which includes some of the oldest farming land in the country, the action of wind and water on the soil of woodland, pasture, and cultivated field is being studied in order to effect a union with Nature in the business of farming.

Topsoil is not made in a day. It is the result of Nature's work over periods of centuries. Slowly she lays down a living layer of productive material over the barren mass of rock and clay. Until the early colonists set foot on the shores of the Northeast, Nature covered this precious organic layer with a dense growth of mighty forests. With the coming of the white man the forests were gradually stripped away to provide the food and shelter which the young Nation needed for life and growth. But rapid soil erosion dates from the cutting and burning of the virgin forests.

If Nature is to be the farmer's friend and not his scourge in the pursuit of his calling, he must observe certain of her basic laws. In the Northeast, soil and water conservation does not present a problem of reclamation; rather, the problem is one of husbanding present resources. With proper tillage and cultural practices the soil of this region can remain productive for centuries to come; without them, it may decline to the point of uselessness in the course of a few decades.

EROSION



WATER running downhill is no respecter of lands or property rights. It scours soil away impartially from deforested mountain slope and cultivated field. Cut-over timberlands offer water a smooth runway allowing it to pick up the speed necessary for wholesale soil removal from unprotected croplands lying below.

AN ACRE OF LAND planted continuously to corn on an 8-percent slope has been known to lose 61 tons of soil a year.

The speed of water as it flows down a slope increases with each foot of progress unless it meets with an obstacle or is absorbed by the soil. And, when the velocity of water increases, its soil-carrying power is multiplied many times. All sloping lands are subject to this force when they are left bare and unprotected.



DEPLETION



RACING along the furrows plowed up and down a slope, water cuts deep into the hillside, removing topsoil and plant food. Without plant food no crops can grow. The tillage of subsoil is "bankrupt farming on bankrupt lands."

Soil in the creek grows no corn,

EVEN ON GENTLE SLOPES sheet erosion removes as much plant-food material as crops do. On steep slopes it removes much more.

and the silt washed down from depleted upland farms is no benefit to the lowland farmer. When upland topsoil is gone, the farms in the valley receive stones, gravel, and subsoil as the water's contribution. Erosion robs all who feel its touch and its damage strikes the businessman as well as the farmer.



FLOODS

CAUSE



DISAPPEARANCE of vegetation means the removal of Nature's countless dams which act to slow the raindrop in its journey toward the sea. There is also a vast difference in the absorptive capacity of completely denuded soils and those which are covered by virgin forests. As the cover or protection of any piece of land departs from the virgin state and approaches the point of denudation, in that

THE ANNUAL LOSSES due to soil erosion in the watershed of the Mississippi River are 20 times greater than the flood losses caused by the river and its tributaries.

E F F E C T

same degree does the land lose its power to halt the flow of water.

Where the raindrop finds no absorptive soil, where natural dams are few and far between, where gullies form inviting channels, heavy rains run swiftly off the land to tax the channels of streams and rivers. Sometimes the rivers go over their banks to submerge adjacent farms and towns, damaging homes and property.



RUIN



WHEN topsoil leaves the farm, agriculture ceases to be a profitable occupation. In many cases, the cause of farm abandonment can be traced to neglect of simple rules of land use. Ruined farms pay no taxes, provide no food, support no families. They are a blight to the community as well as to the individual. Only the age-long processes of Nature can restore a ruined farm to its former productive state.

CONSERVATION

Nearly any farmer can use his land profitably without permanently sacrificing its productive capacity. Conservation farming is simply a matter of harmonizing the present economic needs of the farm with the unchanging laws of Nature. Careful land use involves both vegetative and mechanical methods of soil and moisture conservation. The trees and grasses—Nature's own protective soil covering—are used wherever needed. Cultivated lands frequently require simple engineering structures of various kinds. A complete land-use program of soil and moisture conservation for the whole farm requires a combination of all applicable methods of erosion control.

WOODLANDS



ON STEEP slopes the soil needs the protection which can be afforded only by a healthy growth of trees. As the first line of defense, the canopy of their leaves shields the ground against the beating of the hardest summer rains. On the forest floor, the thick covering of litter protects the surface soil and keeps it absorptive. Beneath the ground a tangled network of

TESTS SHOW THAT it would require over 375,000 years to lose 7 inches of topsoil on a 10-percent slope covered by virgin forest.

roots binds the earth and holds it in place.

Properly managed, woodlands are also a source of farm income. Protection from grazing not only guards the soil, but also permits the continuous growth of young trees to replace the crop of mature timber removed for farm use or for sale. Desirable forms of wildlife abound where food and cover are plentiful.



COVER



PASTURES play a leading role in the farming business of the northeastern States. Equally important is their value for soil and water conservation. A thick pasture sod holds the soil in place on steep slopes and makes running water creep.

Proper location of pastures on the farm, rotation of grazing to give the vegetation a periodic rest, ample liming and fertilization—all are elements which promote the effectiveness of grass and clover as a means of erosion control and a producer of farm income.

RESULTS FROM ITHACA, N. Y., show that it would take more than 50 centuries to erode all the soil from a good meadow on an average slope. Nature builds soil faster than that.

Alfalfa is a plant of great value to the conservation farmer. Commonly planted with a nurse crop of wheat, oats, or barley, it spreads a dense protective mat above the ground surface and holds soil fast by an intricate, binding root system.

Like other leguminous plants, alfalfa increases fertility by pulling nitrogen out of the atmosphere and transmitting it to the soil. Offering two or three cuttings a year, it is one of the most valuable forage crops grown in the Northeast.



PROTECTION



CROPLANDS present peculiar problems in erosion control. By running his cultivator across the slope on the contour of the land, the farmer creates a whole series of dams lying across the path of the escaping rain water. Strips of close-growing, erosion-resisting crops, like hay, planted above and below cultivated strips, act further to check the flow of water over long slopes and guard against soil losses. Con-

IN 5 MONTHS, sloping ground near Ithaca, N. Y., planted to potatoes running up and down hill, lost 650 times as much soil and 14 times as much water as adjoining ground planted to potatoes, oats, and clover in strips across the slope.

tour strip cropping, as this practice is called, also offers a convenient means of crop rotation.

Orchards also require special treatment if soil and moisture are to be saved and yields maintained. A protective covering of vegetation is one of the prime essentials wherever its use is possible. Cover crops, such as rye, are being used to clothe the soil between tree rows in many northeastern peach orchards.



TERRACES



TERRACES are cropland dams stretching across the slope. Broad-based, and with proper grades, they resist the downhill rush of water and carry it slowly to protected outlets. Crops benefit from the increased moisture penetration and the preservation of fertile topsoil.

In plowing a terraced field, the farmer starts a backfurrow on each terrace ridge, thus helping to maintain the height of the terrace. Supported by strip cropping and con-

SIXTY POUNDS OF SOIL per acre were lost from the part of a wheatfield protected by terraces during a 1.17-inch rain. From the unterraced part of the same field, 2,100 pounds of soil per acre were washed away.

tour tillage, terraces help solve the erosion problem on cultivated land.

Pastures sometimes need dams too. Furrows plowed on the contour at intervals down the slope of steep pasture land trap the rainfall and make it available for the growth of plants. In turn, the grass resulting from the increased moisture binds the soil. Grass grows greener along the furrows when summer dry spells plague the farmer.



STRUCTURES

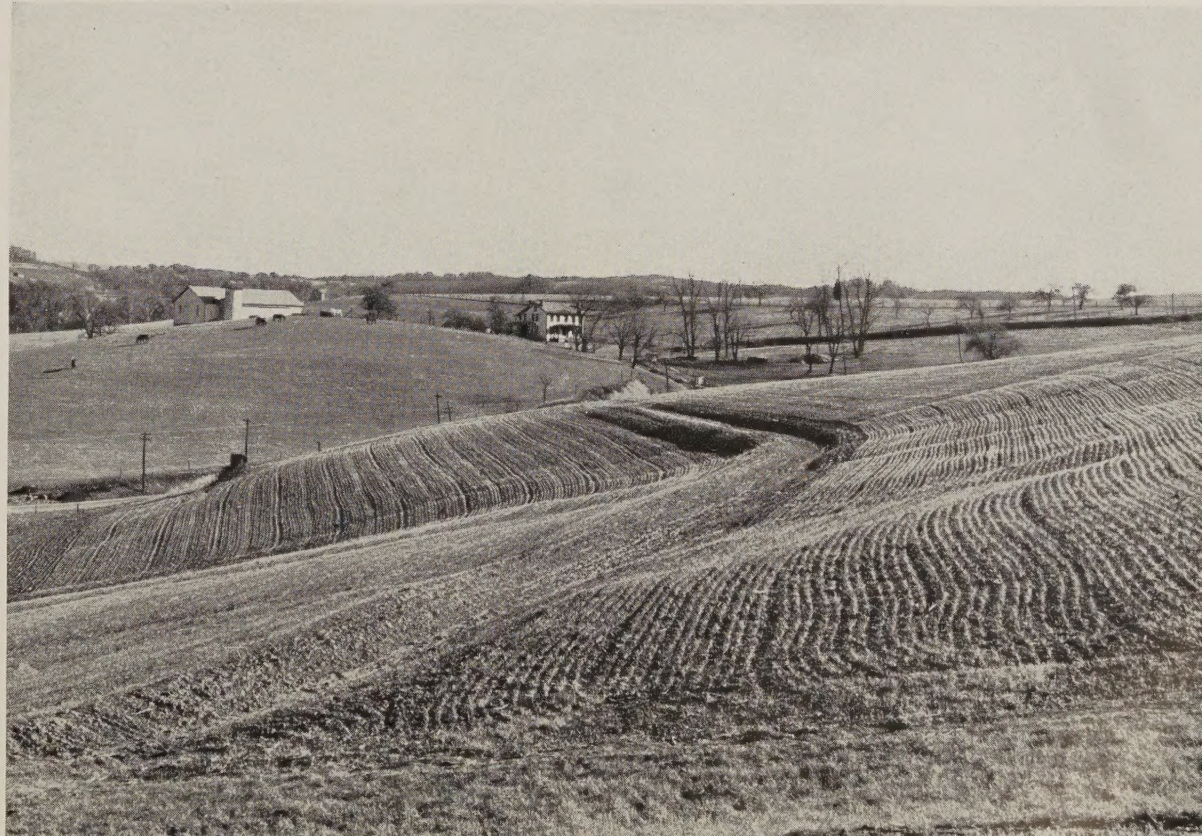


GULLIES are formed where rain water concentrates and cuts deep into the soil. Eventually these gorges become impassable barriers to the progress of farm machinery and the channels pour water into the lowlands at high speed. A dam, or diversion structure, placed at the head of a gully will prevent it from eating farther back into valuable cropland. Inexpensive dams built across the bed will reduce the cutting power of the water and give

ACCORDING TO PHYSICAL laws, when the speed of water run-off is doubled, its cutting power is multiplied by 4, its power to carry soil by 32, and the size of particles it can carry by 64.

grass and trees a chance to gain a permanent foothold.

On cultivated slopes also, mechanical measures are helpful in bringing the forces of erosion under control. Generally used in combination with contour tillage, diversion ditches and diversion terraces divide large drainage areas into smaller ones. Water is carried away slowly to a protected outlet before it has a chance to gather destructive speed and volume.



HOMES



TOPSOIL is the farmer's principal asset in business. A farm without fertile soil is like a bank account without capital. But careful husbandry brings yearly income without depletion of the capital base. Conservation farmers build comfortable homes and pass on well-preserved farms to succeeding generations.



On the back cover of this publication is a map showing the location of the projects and camps in the Northeast where practical measures of erosion control are being demonstrated in actual operation. Visitors are cordially invited to inspect these areas and to seek the assistance and advice of staff members.

S.C.S. DEMONSTRATION PROJECTS REGION I

Presque Isle	Me.	Waynesboro	Pa.
Burlington	Vt.	Vandergrift	Pa.
Both	N.Y.	New Brunswick	N.J.
Ithaca	N.Y.	Moorestown	N.J.
Norwich	N.Y.	Freehold	N.J.
Indiana	Pa.	Spencer	W.Va.
LANCASTER	Po.	Moundsville	W.Va.
		Hagerstown	Md.



LEGEND

 S.C.S. PROJECTS
 S.C.S. CAMPS